

# AGARD and RTO

## Technical Publications: a quarterly listing

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This is a listing of unclassified AGARD and RTO technical publications NASA received and announced in the NASA STI Database during the quarter cited above. Requests for reports on the list may be made by document identification number (19980218702) from the NASA Center for AeroSpace Information, 7121 Standard Drive, Hanover, MD 21076-1320. Requests may also be made by e-mail [help@sti.nasa.gov](mailto:help@sti.nasa.gov), fax (301) 621-0134, or telephone (301) 621-0390. Where stock permits, requests will be filled with printed copies; if printed copies are not available, microfiche copies will be supplied. This listing can also be viewed and downloaded via the NASA STI Program home page at <http://www.sti.nasa.gov>.

**19980218702** Advisory Group for Aerospace Research and Development, Structures and Materials Panel, Neuilly-Sur-Seine, France

**Virtual Manufacturing *La Fabrication Virtuelle***

May 1998; 145p; In English; 85th, 13-14 Oct. 1997, Aalborg, Denmark

Report No.(s): AD-A346507; AGARD-R-821; ISBN 92-836-0053-3; No Copyright; Avail: CASI; A07, Hardcopy; A02, Microfiche

No Abstract

Author

*Computer Aided Design; Aircraft Design*

**19980219354** Research and Technology Organization, Applied Vehicle Technology Panel, Neuilly-sur-Seine, France

**Integrated Multidisciplinary Design of High Pressure Multistage Compressor Systems *La Conception Integree des Compresseurs Multi-Etage a Haute Performance***

Sep. 1998; 156p; In English; Integrated Multidisciplinary Design of High Pressure Multistage Compressor Systems, 14-15 Sep. 1998, Lyon, Cologne, Cleveland, OH, France, Germany, USA; Sponsored by Research and Technology Organization, France; Also announced as 19980219355 through 19980219361; Original contains color illustrations

Report No.(s): RTO-EN-1; AC/323-(AVT)-TP/1; ISBN 92-837-1000-2; Copyright Waived; Avail: CASI; A08, Hardcopy; A02, Microfiche

This Lecture Series covers the recent advances in the process of performing integrated design of high performance multistage compressors. The purpose is to broaden the compressor designer's understanding beyond traditional fluid dynamics to include the multidisciplinary systems approach required by modern gas turbine engines for longer life, lower acquisition and maintenance costs. The design process requires an optimization of the entire machine, which may be significantly different from the best aerodynamic design of each stage or blade row. In addition, many modern engines are simultaneously increasing compressor performance, and reducing machine length, which reinforces the fluid and structure interactions. Finally, in order to reduce both production and maintenance costs, manufacturing constraints have to be taken into account in the initial phase of the design process. The Lecture Series underlines the role of Computational Fluid Dynamics, as well as solid mechanics and vibration simulations. The need for compressor designs to consider and model mechanical interactions and manufacturing concerns will be a central focus. The subjects to be covered are: (1) Flow simulations with special emphasis on three-dimensional computations and on the stage stacking and interactions in multistage compressors; (2) Modelling the fluid structure interactions; and (3) First order manufacturing constraints and requirements.

Author

*Multidisciplinary Design Optimization; Gas Turbine Engines; Turbocompressors; Computer Aided Design*

**19980227143** Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine France

**AGARD Reports *Quarterly Report, 1 Apr. 1998 - 30 Jun. 1998***

Jul. 1998; 5p; In English

Report No.(s): AD-A350566; AGARD-98-02; No Copyright; Avail: CASI; A01, Hardcopy; A01, Microfiche

This is a listing of unclassified AGARD publications NASA received and announced in the NASA STI Database during the quarter cited above. Requests for reports on the list may be made by document identification number (19980018672) from the NASA Center for AeroSpace Information, 7121 Standard Drive, Hanover, MD 21076-1320.

DTIC

*Reports; Data Bases*

**19980236568** Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine, France

**Wind Tunnel Wall Corrections *La Correction des Effets de Paroi en Soufflerie***

Ewald, B. F. R., Editor, Technische Univ., Germany; Oct. 1998; 560p; In English

Report No.(s): AGARD-AG-336; ISBN 92-836-1076-8; Copyright Waived; Avail: CASI; A24, Hardcopy; A04, Microfiche

This AGARDograph has been compiled by an international team of wind tunnel wall correction experts. The state of the art in wall corrections is presented with special emphasis given to the description of modern methods based on Computational Fluid Dynamics (CFD). Topics covered include: Open Test Sections, Closed Test Sections, Ventilated Test Sections, Boundary Measurement Methods, Transonic Wall Interference, Bluff Body Corrections, Adaptive Walls, Panel Methods, and CFD Methods.

Author

*Wall Flow; Boundary Layer Flow; Computational Fluid Dynamics; Boundary Conditions; Aerodynamic Interference; Wind Tunnel Walls; Correction*

**19980237546** Advisory Group for Aerospace Research and Development, Flight Vehicle Integration Panel, Neuilly-Sur-Seine, France

**Aircraft Design Integration and Affordability *L'integration de la conception aeronautique et le cout de possession acceptable***

Campos, Luis Manuel Braga da Costa, Instituto Superior Tecnico, Portugal; Nov. 1998; 120p; In English

Report No.(s): AGARD-R-826; ISBN 92-836-1065-2; Copyright Waived; Avail: CASI; A06, Hardcopy; A02, Microfiche

This AGARD Advisory Report, was from the Flight Vehicle Integration Panel input to the AGARD study Aerospace "2020". This report examines the difficult questions of capability and affordability. The report focuses on the relevant trends in operational requirements and the technologies available to achieve these requirements. The report considers the affordability of forces as a main issue for the future. Topics include: a discussion in operational requirements, the technology available, advanced structures and materials, systems integration, types of air vehicles, and the affordability of forces. Technologies are assessed from the viewpoints of both potential capabilities and threats. Recommendations and conclusions are presented.

Author

*Technology Assessment; Military Aircraft; Air Defense; Aircraft Design; Aircraft Production Costs; Product Development; Research and Development; Systems Integration*

**19980032590** Research and Technology Organization, Neuilly-sur-Seine, France

**Technical Programme 1998 *Le Programme Technique, 1998***

Feb. 1998; 36p; In English

Report No.(s): RTO-TP-98; AC/323-(HQ)D/11; Copyright Waived; Avail: CASI; A03, Hardcopy; A01, Microfiche

This publication presents the 1998 Technical Programme of meetings, lecture series and courses of the Research and Technology Organization of NATO (RTO). Note that some of the dates and venues are not yet known and there may be changes in others. Section I is an overall list of the activities, and Section H gives a detailed description of each one. This list does not include business meetings, working groups, field trials, or publications. All the activities listed are open to participation by at least some people who are not members of the sponsoring body, and announcements will be distributed a few months beforehand giving details of who can take part and how to apply. Those marked 'O' in Section I are open to PfP nations, those marked 'U' are not, and those marked 'C' require an appropriate security clearance.

Derived from text

*North Atlantic Treaty Organization (NATO); Lectures; Commerce*

**19990007733** Research and Technology Organization, Neuilly-sur-Seine, France

**Advanced Pattern Recognition Techniques** *Techniques avancées de reconnaissance de forme*

Advanced Pattern Recognition Techniques; Sep. 1998; 168p; In English; Advanced Pattern Recognition Techniques, 14-15 Sep. 1998, Bristol, Rome, Lisbon, UK, Italy, Portugal; Sponsored by Research and Technology Organization, France; Also announced as 19990007734 through 19990007745; Original contains color illustrations

Report No.(s): RTO-EN-2; AC/323-(SET)-TP/1; RTO-LS-214; ISBN 92-837-1001-0; Copyright Waived; Avail: CASI; A08, Hardcopy; A02, Microfiche

Pattern recognition is the extraction of consistent information from noisy spatiotemporal data. It can be and is currently being used in systems for battlefield supervision, smart weapons, and anti-counterfeiting of all kinds. A current application is the automatic detection of land mines and unexploded ordnance (UXO). The methods employed can be subdivided in the following manner: (1) statistical methods; (2) neuro-methods; (3) fuzzy-methods; and (4) neuro-fuzzy methods. Each of these methods has its special advantages and drawbacks, but all of them require the computation of feature variables from measurement or simulation data, e.g. from microwave backscattering. The Lecture Series covers the following topics: (1) Introductory Overview on Pattern Recognition Techniques, (1)-(4); (2) Feature Extraction for Pattern Recognition by Electromagnetic, magnetic, and acoustic singularity identification, model based scattering signatures, wavelet techniques, SAR/ISAR imaging, bistatic microwave imaging, and electromagnetic inversion techniques; (3) Real-time Implementation of Pattern Recognition Methods; and Introduction to Software and Hardware for Pattern Recognition.

Author

*Conferences; Imaging Techniques; Pattern Recognition; Target Recognition; Image Processing; Radar Imagery; Radar Signatures; Radar Targets*

**19990007886** Research and Technology Organization, Human Factors and Medicine Panel, Neuilly-sur-Seine, France

**Alternative Control Technologies: Human Factors Issues** *Techniques de Pilotage Alternatives: Le Facteur Humain*

Oct. 1998; 116p; In English; Alternative Control Technologies: Human Factors Issues, 7-8 Oct. 1998, Bretigny, Wright-Patterson AFB, OH, France, USA; Also announced as 19990007887 through 19990007895

Report No.(s): RTO-EN-3; AC/323(HFM)TP/1; ISBN 92-837-1003-7; Copyright Waived; Avail: CASI; A06, Hardcopy; A02, Microfiche

With the increasing intelligence of computer systems, it is becoming more desirable to have an operator communicate with machines rather than simply operate them. In combat aircraft, this need to communicate is made quite crucial due to high temporal pressure and workload during critical phases of the flight (ingress, engagement, deployment of self-defence). The HOTAS concept, with manual controls fitted on the stick and throttle, has been widely used in modern fighters such as F16, F18, EFA and Rafale. This concept allows pilots to input real time commands to the aircraft system. However, it increases the complexity of the pilot task due to inflation of real time controls, with some controls being multifunction. It is therefore desirable, in the framework of "ecological interfaces", to introduce alternative input channels in order to reduce the complexity of manual control in the HOTAS concept and allow more direct and natural access to the aircraft systems. Control and display technologies are the critical enablers for these advanced interfaces. There are a variety of novel alternative control technologies that when integrated usefully with critical mission tasks can make natural use of the innate potential of human sensory and motor systems. Careful design and integration of candidate control technologies will result in human-machine interfaces which are natural, easier to learn, easier to use, and less prone to error. Significant progress is being made on using signals from the brain, muscles, voice, lip, head position, eye position and gestures for the control of computers and other devices. Judicious application of alternative control technologies has the potential to increase the bandwidth of operator-system interaction, improve the effectiveness of military systems, and realise cost savings. Alternative controls can reduce workload and improve efficiency within the cockpit, directly supporting the warfighter. by the end of 1997, WG 25 had extensively reviewed human factor aspects of current and prospective alternative technologies along with operational needs and integration issues. Dissemination of the knowledge among Engineering and Human Factor communities has to be made as early as possible to facilitate implementation of these new technologies in future projects.

Author

*Human Factors Engineering; Man Machine Systems; Manual Control; Artificial Intelligence; Control Equipment; Automatic Control; Control Systems Design; Real Time Operation*

**19990007919** Research and Technology Organization, Neuilly-sur-Seine, France

**RTO Membership, 1998** *Les Membres de la RTO, 1998*

May 1998; 72p; In English

Report No.(s): RTO-MEMB-98; AC/323-(RTA)D/15; Copyright Waived; Avail: CASI; A04, Hardcopy; A01, Microfiche

This membership list gives the names and addresses of: Research and Technology Board members; RTO Panel members (including the Technical Information Committee); Chairmen or Directors of Working Groups, Research Study Groups, Aerospace Applications Studies and Long Term Scientific Studies@ National Coordinators; as at mid-February 1998. It also includes a list of RTA Staff. The Panels have all made recommendations for Members at Large, but they are not included, since they had not been approved by the Board when this went to press. These lists have been compiled from existing database programmes and so have various different formats. A standard database for the Agency is being developed, which will remove these inconsistencies. Derived from text

*Aerospace Engineering; Data Bases; Format*